

REMARKS

Claims 1-12 are currently pending in this application. Claims 8-10 were withdrawn by the Examiner following Applicant's election in response to a restriction requirement. Claims 1, 6, and 8 have been amended and claims 11 and 12 have been added, support for which is found throughout the specification, for example in paragraph [0038] of the published application (US 2008/0113269 A1). No new matter has been added.

In view of the foregoing amendments and the following remarks, it is respectfully submitted that the claims are allowable and the application be passed to issue.

*Patentability under 35 U.S.C. § 103(a)*

Claims 1-7 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Shimamura et al. WO 03/079469 (referencing English language equivalent US 2005/0287439) in view of Nakamoto (JP 200-173612). Applicant respectfully disagrees with the rejection.

However, in an effort to expedite prosecution, independent claims 1 and 6 (and withdrawn claim 8) have been amended to further clarify the instant subject matter. As amended, claims 1 and 6 each now recite, in pertinent part:

A negative electrode material for lithium secondary batteries . . . comprising . . . a film having a silicon oxide, the film being formed on a surface portion of the basic material particle, the surface portion being other than a surface portion to which the carbon material is adhered, **wherein, the film is formed in an atmosphere including an inert gas.**

[Emphasis supplied].

As explained in paragraph [0038] of the published application, the claimed configuration avoids excessive oxidation and the formation of silicon nitrides. At a minimum, none of the cited references teach or suggest the above recited configuration.

On page 3 of the Office Action mailed on December 21, 2010 ("the Office Action"), it is conceded that Shimamura does not disclose a carbon material adhered to a part of the surface of the basic material particle and a film having a silicon oxide formed on a surface portion of the base material and not on the carbon. Therefore, Nakamoto is relied on for teaching fibrous carbon fixed over a part of the surface of a negative electrode material comprising a Si composite. Applicants note that this alleged teaching by Nakamoto is not the same as the claimed configuration in which a film having a **silicon oxide** is formed on a surface portion of the basic material particle.

Moreover, on page 3 of the Office Action, it is also asserted that neither of the cited references disclose manufacturing the negative electrode in a non-oxidative atmosphere (without the presence of oxygen), and based on this, the Examiner takes the position that the properties of having a silicon oxide film formed on an exposed surface position of the composite base material is inherent.

In view of the present subject matter as recited in amended claims 1 and 6, which state **"the film is formed in an atmosphere including an inert gas,"** it is respectfully submitted that the Examiner's above position, supports Applicant's position that none of the cited references teach or suggest the subject matter recited in claim 1. In other words, according to the claimed subject matter, a film having a silicon oxide, formed on a surface portion of the basic material particle, **wherein, the film is formed in an atmosphere including an inert gas,** is not taught or suggested by the cited references, because neither of the references "disclose manufacturing the negative electrode in a non-oxidative atmosphere (without the presence of oxygen)." Thus, it is clear that the cited references fail to teach or suggest all of the elements of amended claims 1 and 6.

Furthermore, as shown, for example in Table 1, the present configuration as recited in claims 1 and 6 would not have been obvious to a person having ordinary skill in the art, as it achieves unexpectedly improved battery capacity (batteries LE1 to LE5, capacity retention ratio of 82-95%) as compared to the configuration that the Examiner asserts is taught by the combination or references, (i.e. slow oxidation treatment, battery LC2 having a capacity retention ratio of only 75%). Applicant notes that in the "Response to Arguments" section on page 5 of the Office Action, the Examiner takes the position that the above discussed unexpected results are not significant or unexpected. Applicant respectfully requests reconsideration of the above discussed showing of unexpected results in view of the following clarification of the results shown in Table 1.

1) The result of LC3 showing a capacity retention ratio of 77% should be compared with that of LE4 (92%) formed of same material (scaly graphite).

2) To prepare LC3, the slow oxidation treatment is not performed. Therefore, LC3 does not comprise the claimed qualities and structure of claim 1.

3) LC2 is formed with the slow oxidation treatment before adhesion of carbon. Therefore, the film of a silicon oxide should be formed on a surface portion of the base material particle, also on a surface portion to which the carbon material is adhered. Accordingly, LC2 does not comprise the claimed qualities and structure of claim 1.

Accordingly, it is respectfully submitted that claims 1 and 6 are allowable. Furthermore, claims 2-5 and 7 depend from and further define the subject matter of claims 1 and 6 and therefore are also allowable.

Moreover, claim 4 is also allowable based on its own merits. Claim 4 recites, in pertinent part, "wherein the amount of the film is at least 0.1 wt% and at most 1.0 wt% per silicon element

in terms of oxygen amount.” The configuration as recited in claim 4 would not be obvious in view of the cited references, as there is clearly no teaching or suggestion of controlling the amount of silicon oxide film in any of the references and there is no basis for the assertion that configuration recited in claim 4 would be inherent. As such, the Examiner’s assertion of obviousness is respectfully, without merit.

***Claims 11 and 12***

Claims 11 and 12 each depend from and further define the subject matter of claim 1, and therefore are also allowable, for at least the reasons discussed above. Moreover, claims 11 and 12 are also allowable based on their own merits. Claim 11 recites, in pertinent part, “wherein the inert gas is argon,” and claim 12 recites, “wherein the atmosphere is free of nitrogen.” None of the cited references teach or suggest the these features of claims 11 and 12. Therefore, claims 11 and 12 are allowable based on their own merits.


In view of the above amendments and remarks, Applicants respectfully submit that this application should be allowed and the case passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned.

**Application No.: 10/584,776**

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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